LISBON
SCHOOL OF
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MASTER
FINANCE

MASTER´S FINAL WORK
DISSERTATION

ON INSIDE OWNERSHIP OF BIDDINGS AND M&A PREMIA

PEDRO DANIEL XAVIER PATEIRO

DECEMBER - 2020

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SUPERVISION:
VICTOR BARROS

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Thank you to everyone that helped this dissertation see the light of day.

RESUMO

Este estudo pretende aferir a relação entre o prémio pago numa fusão pela empresa alvo e o nível de ações prórias controladas pela empresa adquirente. Os dados cobrem 870 fusões efetuadas em capital na Europa e nos Estados Unidos da America entre 2010 e 2019.

Os resultados são inconclusívos se o prémio pago pela empresa adquirente varia com o nível de ações próprias controladas pela empresa adquirente. No entanto, a relação é negativa para prémios calculados tendo em conta o preço médio da empresa adquirente entre o dia em que a fusão é anunciada e o dia anterior. Considerando o prémio pago tendo em conta o preço das ações no dia do anúncio da fusão, ou a média dos preços da semana anterior ao anúncio ou a média dos preços do mês anterior ao anúncio, então a relação negativa deixa de ser estatisticamente significante.

Os resultados deste estudo permitem uma melhor compreensão do prémio oferecido pela empresa adquirente numa aquisição o que, tendo em conta que o prémio pode ser uma das razões que leva ao insucesso de fusões, pode permitir que a taxa de insucesso das fusões diminua futuramente.

PALAVRAS-CHAVE: Fusões; Preço prémio; Controlo interno .

CÓDIGOS JEL: G32; G34

ABSTRACT

This study aims to assess the relationship between the premium paid in a merger for the target company and the level of inside ownership of the acquirer. Data covers 870 cash deals in Europe and in the USA between 2010 and 2019.

Results are inconclusive whether the premium paid by the acquiring company changes depending on acquirer's level of inside ownership. Nevertheless, the relationship is negative for premiums computed considering the average price of the target company between the day of the announcement and the day before the announcement. Narrowing the analysis to the premium paid against the stock price at the announcement date, one-week average, or one-month prior the announcement, then the negative relationship is no longer statistically significant.

The results of this study allow a better understanding of the premium paid by the acquiring company on a takeover which, considering that premium can be a reason why mergers fail, may help decrease the rate of merger failure in the future.

KEYWORDS: Mergers; Premium Price; Inside Ownership.

JEL CODES: G32; G34.

Table of Contents

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1. INTRODUCTION

In 2017, the number of mergers transactions was the highest ever recorded, with over 52 000 mergers deals being settled worldwide and with a corresponding combined deal value of almost 4 trillion USD (Institute for Mergers, 2018).

However, several studies have revealed that mergers often do not end up as a successful strategy for the buying company. Such is the case of a KPMG study that mentions that around 83% of completed mergers studied failed to increase the participating shareholders' value in the subsequent years following the merger (KPMG, 1999) and of a more recent *Harvard Business Review 2016* report that refers that the failure rate of mergers and acquisitions sits between 70 percent and 90 percent (Martin, 2016).

This merger reality leads to the question of how can the rate of failure of mergers be so high and known for such a very long time, as the publishing year of the previous two studies reveal, and yet the number of mergers still is annually increasing? What are the reasons of mergers failure? The goal of this study is to explore the topic of merger failure, namely the role premium paid has on merger failure and if the premium changes with the percentage of insider ownership, being an insider, any holder representing 5% more of the total shares outstanding or any officers, members of the board of directors (including their related or affiliated individuals, families, entities and trusts).

The fact that managers continue to see mergers as good strategies for the companies they run despite the low chances of success, makes studying and understanding better mergers and the factors that influence their success or failure a priority in order to mitigate the risks and increase the success rate.

There exists, already, an extensive number of studies done on the field of mergers and acquisitions, ranging from several decades ago up to this day, trying to explain why mergers are often unsuccessful (Renneboog & Vansteenkiste, 2019) but the high rates of failure imply that it still remains some unawareness regarding mergers and acquisitions.

Therefore, considering some studies that show how the price paid by the acquiring company during a takeover is a critical factor for its future success or failure, such is the case of Sirower (1997) and also considering some concrete examples such is the case of

the recent Kraft/Heinz merger (2015) that had the acquiring company admitting they overpaid for the takeover after the bad results the combined company has been demonstrating, it is hypothesized that the amount that is paid over the company's market value may be related to the level of the acquiring company's inside ownership.

This study analysed 870 friendly takeovers in Europe and the United States made in cash between 2010 and 2019. The premium paid was computed using four different time-periods to calculate the average value of the company. All achieved the result that supports the existing literature of the level of ownership of the target company, already controlled by the acquiring company, having a negative impact on the premium. Only when the premium computed considered the target company's average stock price of the week and of the month previous to the announcement date, the ratio cash to assets became relevant with a positive impact on the premium. When the premium considers only the day before the announcement date to reach an average value, also the fact that the acquirer is based in the United States becomes relevant with a positive impact on premium and the level of inside ownership becomes significant with a negative impact on the premium. These results allow the conclusion that it is possible that the level of inside ownership is negatively associated with the premium, being the contribution of this study to existing literature that the higher the control of insiders, the less they will pay. This is important for managers and shareholders during a takeover because if inside ownership is low, the premium will tend to be higher and it can happen a scenario of overpayment, however with the conclusion of this study, managers and shareholders can actively work to counter that overpayment.

The study structure is the following: literature regarding why companies merge will be addressed and then it will focus on explaining bidding premium as one of the reasons mergers fail. Following, it will go through the impacts of managerial ownership on the company and finally will present the empirical study of the impact of the level of inside ownership of the bidding company on the premium paid.

2. LITERATURE REVIEW

2.1. Why companies merge?

A manager that is interested in taking over another company can offer a price to the management of the target company (friendly takeover) or go directly to the market to purchase shares from shareholders (hostile takeover). Then, if his offer is accepted, a merger will happen and the acquirer will take control and incorporate both firm operations and management into a single one.

As Manne (2009) detailed, mergers were considered to be a market mechanism to fix inefficiencies in the companies as companies that were inefficiently managed would show a lower stock price than what the market considered to be the right price and so an outsider entity, believing to be able to increase the company's price, would target and acquire it. Therefore, the more an outsider believed the company to be undervalued the higher the potential gains of acquiring it and the greater the attractiveness of a merger.

However, Morck, Shleifer and Vishny (1988) stated that the disciplining of underperforming management was more prominent on hostile takeovers and that, instead, on friendly takeovers, the acquisitions were mostly driven by the potential synergies from combining both firms' operations. Berkovitch and Narayanan (1993) and Goergen and Renneboog (2004) studies also supported it by concluding that synergies were the major motive that lead managers to take over other companies.

This was also observed by Brouthers, Van Hastenburg and Van Den Ven (1998) who surveyed managers on their main reasons for acquiring another company. The results showed that most were aiming to increase their company's market power and shareholder's profitability through the synergies between the two companies, as the output and efficiency would be greater from combining the companies, deriving these synergies from marketing and operational economies of scale or reductions in the cost structure. Other prevalent reasons for takeovers were revealed such as the acquiring of new information/data or technologies that belong to the target company, the increases in competitiveness or decrease in the number competitors, expansion or renewal of the

company and the diversification of businesses to decrease the company risk or to enter in a different market.

However, empirical studies concerning mergers are mixed on whether they are a good strategy or not for the acquiring company. More often than not, mergers end up destroying the acquiring company value, as observed by Gugler *et al.* (2003), who by using data from several European countries, found that acquiring companies that have their profits and efficiency decreased amount for the larger proportion of mergers. Hitt, Ireland and Harrison (2001) study also shows, on average, added value coming from mergers is little to none and Moeller, Schlingemann and Stulz (2005) evidenced that acquiring companies' shareholders lose wealth around acquisitions announcements due to negative synergies gains by firms with extremely high valuations and poor performance occurring after a takeover. These conclusions were reinforced by Hitt et al. (2001) who demonstrated that in the five years following most acquisitions, shareholders wealth remains the same or may decrease and also by Furfine and Rosen (2011) that reported that, on average, mergers increase the default risk of the acquiring firm.

Therefore, if the potential benefits of mergers seem so many, why are the rates of unsuccessful mergers so high?

2.2. Why are mergers unsuccessful?

Many factors can lead a takeover to failure and most of the times those factors are related to inside reasons such as improper management. Martin (2016) showed that one main reason why mergers fail is due to managers focusing too much on what they can benefit from a merger operation instead of focusing on making the procedure work. Poor planning being an argument for mergers failures is also supported by the work of Cosh *et al.*, (1989), who report that in the three to five years prior to a merger most acquiring companies showed abnormal extra returns, and of Jensen (1986) who also revealed a negative relationship between the acquiring company cash holdings prior takeover and the post-merger performance that led to the conclusion that extra cash available may push a manager to rush a merger strategy without the proper planning and assessment of risks and also that companies with extreme cash holdings may have free cash flow problems

represented by the lack of investment alternatives and are more prone to make bad acquisitions.

Managers can also be a reason for mergers failing when managers prefer to act on their own self-interest instead of taking decisions that are in the stakeholders' best interest. This can be observed when they do not return excess cash to shareholders and opt for bad takeovers strategies instead (Michael Jensen, 1986). Managers have an incentive for this type of behavior as acquisitions usually increase the managers compensation even when shareholders' wealth declines (Bliss & Rosen, 2001; Grinstein & Hribar, 2004).

Managers poor judgment during takeover scenarios can also be caused by hubris according to Goergen and Renneboog (2004) as one third of the largest European mergers in the 1990s suffered from the managers' expectations of the synergies being higher than the ones observed. Malmendier and Tate (2005) report also found that less profitable mergers occur more frequently when optimistic managers are in control.

Other factors may influence the performance of a merger such as: an insufficient or wrong analysis of the potential value creation and synergies or a bad assessment of specific risks and benefits which then can result in less returns or even losses of performance after merger (Salter and Weinhold, 1978; Roll, 1986; Sirower, 1997)*;* there could also be employee resistance to the combined entry and clash of different organizational cultures that may difficult the process of integration and operations of both firms into a single one (Larsson & Finkelstein, 1999); cross-border mergers (Seth et al., 2000) and the difference in size (Ingham et al., 1992) may also decrease chances of success of mergers and if the workforce of the merged company decreases, it may lead to poorer performance post acquisition (Krishnan, Hitt and Park 2007).

2.3. The impact of bidding price

Another main determinant of mergers success is the price that is offered to pay for the target company.

When a company is considering acquiring another, it must decide the way the offer will be made and how much it is willing to pay for it. The acquirer can then negotiate

with the target's management, which is referred to as a friendly takeover. Instead, he can go directly to the target company's shareholders in the market, and offer to buy their shares in what it is called as tender offer or hostile takeover (DePamphilis, 2019). Either way, the final bid price will be a deciding factor of the offer, so the bidder usually offers an amount above the market value of the company to convince the target company to sell their holdings. This amount is called the bid premium, being defined as the ratio of the ultimate price paid per target share divided by the price before the takeover announcement.

Bidding premium can be a critical determinant on whether a merger is successful or not in the future. Some studies reveal high bidding premiums can put a large burden on the acquiring firms and lead to increased chances of negative performance, due to the inability to earn enough returns beyond the premium paid for the takeover (Datta et al., 1992). On this note, Sirower (1997) reports acquisition premiums to inversely affect acquirers' shareholder returns for up to 4 years following the merger and that around 70% of acquiring firms fail to deliver enough returns to breakeven from the premium payment. Newer studies also support this, such is the case of Abhyankar, Ho and Zhao (2005) who studied 305 merges in UK from 1985 to 2000 and found that overpayment is a possible reason for post-merger underperformance, Nnadi and Aghanya (2018) who studied European deals between 2000-2013 and found that premium has a negative impact on short-term performance and also on the long-run but less pronounced and Tarasovich (2014) also studied pharmaceutical and biotechnology mergers from 1998 to 2005 and found that acquisition premiums are positively related to long term underperformance of the buying companies.

Acquiring firms having trouble recovering from the costs of the price they paid during the takeover is no surprise when we observe that on average, the premium paid ranges between 40% and 50% over the share market price (Laamanen & Keil, 2008) and, not uncommonly, premium can even be higher than 100% (Jensen, 1988; Betton, Eckbo and Thorburn, 2009). Varaiya and Ferris (1987) research also revealed that during the 1980s, 67% of the completed takeovers had targets being overpaid for. As concrete examples of the overpaying cases, there is the takeover of the company Federated Department Stores, that occurred with a premium paid of 124-percent which lead to the buying company, one year later, declaring bankruptcy, citing its inability to meet the debt

payments originating from the acquisition (Kaplan, 1989) and the takeover of Kraft by H. J. Heinz Co. in 2015 that had the CEO of Heinz expressed regret concerning the merger stating they paid too much for it. At the time, Kraft was valuated at $62.6 billion and had a combined value on the stock market worth $89 billion (James Fontanella-Khan, 2019) only to be down to $41.6 billion and in cost-cutting strategies in early 2019.

Managers usually decide the price they will offer for the target company by looking into the market price of the target stocks and analyzing the company. The market price usually is the minimum threshold for the offer, since no shareholder would generally accept to sell their stocks below that value. In the perspective of the bidding company, usually, this is an undervalued representation of the potential value of the target company as it does not reflect the potential synergies surging with the merger and is, usually, the reason why a merger is attractive to them in the first place (Roll, 1986).

The price premium is a significant reason to explain mergers failing, but despite this, it is one of the less explored by literature. Sirower (1997) stated that for a merger to be successful in the long run, the premium price should be inferior to the combined synergies that would arise from merging (maximum threshold for the payment), assuming that if the price is above those synergies the acquirer will not generate enough returns to overcome the buying expenditure which would become a burden for the company. In these synergies it is reflected the estimated increase in value derived from aspects such as new corporate structure, improved management, cost reductions in labor or capital equipment, debt tax shields, market power, market access and knowledge and other economic factors (Harris et al., 2005; Lang et al., 1989). The combined synergies are often an estimate, and so they rely on future projections, assumptions and on the information available at the time. The acquiring management analyzes these factors and then settles on a price to offer. However, more often than not, merged companies are not able achieve the expected synergies and the offered price ends ups being too high in reality (Hitt et al., 2009) and companies have a hard time recovering.

Contrariwise, Ismail (2011) indicated that synergies are not the main reason that explains the high premium paid, and that instead acquiring firms are more likely to overpay if they have low growth potential and if the target firm is large, has a large growth

potential and higher premerger operating performance. The author also demonstrated how these mergers end up destroying the acquiring company shareholders wealth.

Roll (1986) proposed that another main reason for price premium to be set too high was due to the managers' self-confidence with what is known as the hubris hypothesis. The author considered that bid offers suggest that bidders estimate the target company's potential value to be higher than the current one, if this was not the case then the bidder would not have interest to the bid on the company on the first place. This would mean that in the takeover cases where managers overpay, in reality, what happened was that they offered that high bid because they were too self-confident that their inflated valuation was correct. Data from bid companies, prior to bidding, revealing extra returns and higher amounts of cash supports the hubris hypothesis as the good performance could fuel the manager with self-confidence and lead him to overpay. Other authors tested the role of hubris on premium and got similar results such as Hietala, Kaplan and Robinson (2002) and Yang (2015).

Hambrick and Hayward (1997) continued Roll's study and considered different ways CEO's hubris could manifest and its effects on the bidding premium. Examining organizations success, media praise for the CEO and CEO's self-importance as proxies to analyze the CEO's hubris, they demonstrated them to be significant. The more prominent these factors the higher the CEO hubris would be which would reflect on a higher premium. The study also had significant results concerning when a CEO was in the board chair as well or when the proportion of inside directors increases, concluding both would increase a CEO's hubris. Their study also reported that the larger the premium paid for an acquisition, the worse the subsequent performance of the acquiring firm.

As an alternative to hubris, Sirower (1997) suggested that instead, mergers' high failure rates was a consequence of badly executed due diligences that would lead to an unfamiliarity with critical elements of the acquisition strategy, lack of adequate knowledge of the target company, and unexpected problems that occur in the integration process.

Premium offered is also a result of managers' decision biases, as Baker, Pan and Wurgler (2009) evidenced, the most part of bidding managers use the values of target firm's 52-week trading high prior to the announcement to determine acquisition

premiums with no empirical motive, meaning that if the number of weeks used to calculate the premium changed, then the premium would also change.

Varaiya and Ferris (1987) and Coff (2003) also demonstrated that competition to acquire a company may increase premium paid. Each bidder estimates the added value from the merging synergies and offer a correspondent premium. The bidder who expected more synergies or overestimated the most the target's value would have the winning bid. This is often called the "winner's curse". The authors suggested that investors that did not have it in consideration, would have their bid premium, on average, be higher than takeover gains and so, on average, the excess return for the winning bidder would be negative. The authors determined, also, that the higher the divergence of opinion between the bidders about estimated gains and the greater the degree of competition, then the larger the premium offered by the successful bidder would be.

Another study by Dionne, La Haye and Bergerès (2015) suggested the divergence between opinions could be merely different access to information and that asymmetrical information would have an impact on bid premium. To test it, they looked for a relation between premium and bidders owning at least 5% of shares in target company (blockholders) before the acquirer's first bid, as this would probably provide them with insider information not available to other bidders. The study's results demonstrated that the presence of blockholders, usually, leads to less premium paid than bidders that do not own large amounts of target shares.

Betton and Eckbo (2000) also expanded the impact of toeholds (i.e. investor owning shares of the target company before bidding) by evidencing that the higher the toehold, the lesser the number of shares needed to be bought at premium. There would also be less shareholders the investor would need to convince to sell their shares, thus decreasing the disparity of opinions regarding the shares' worth from the shareholders' side which would lead to a smaller premium. Their study also found a negative relationship between bidding premium and the target's company equity size.

Information asymmetry impact on the premium was also shown by Cheng, Li and Tong (2016) who showed that the higher the information asymmetry the higher the premiums. The reason being that opaque targets usually suffer from market discount which in turn will motivate informed investors to bid for underpriced targets. As the

asymmetry is bigger and the acquirer has access to more information about the target, the target will be priced at a smaller discount than the one allocated by the market.

Interpersonal relations affecting bidding premium was also explored by Haunschild (1994) who hypothesized that interorganizational relationships between managers would affect how much investors choose to pay for a takeover. Was analyzed if company managers would look to their partners decisions and to professional firms dedicated to merger scenarios when deciding on the price offer. They concluded that acquirers would pay premiums levels similar to what managers they had a relationship with had paid and that investment bankers were using the same premium determining models to different companies resulting in premiums around the same level for companies that hired their service. Malhotra, Zhu and Reus (2015) also studied managers looking for outside inputs when deciding how much to pay and found evidence that managers use other recent mergers in the same market to anchor their acquisition price.

Other studies showed how several other variables had an impact on premium paid. It was demonstrated by Slusky and Caves (1991) that premium would increase with the financial synergies expected from the takeover and the existence of actual and possible competitors for acquiring the target company. Bugeja and Walter (1995) studied several other variables as possible influencers of the level of premium and found evidence of the performance of target company getting worse before the announcement, would lead to higher chances that a new management could improve it and increase returns and thus, making the takeover more desirable, increasing the premium managers were willing to offer. Also proved that bidder performance was a significant variable, showing that the higher the performance of the bidder management the higher the premium as synergies would probably be greater or the bidder would just have more money to offer. The level of initial ownership of the target company by the bidder was revealed to be relevant too, as the higher the percentage of shares owned the smaller the premium. The presence of higher levels of cash flow on the target company had a negative relation with premium and the higher borrowing capacity for the bidder proved to increase premium, as it is theorized by the authors that that bidders would have an easier time finding new funds for projects that increase value. Also, Schwert, (1996) found that tender offers, instead of directly negotiating with target company's management, can originate higher premiums offered. Goergen and Renneboog (2004) found a relationship between the market-to-book

ratio of the target company being high leading to a higher bid premium and Alexandridis *et al.* (2013) found a negative relationship between the premium paid in acquisitions and target size, indicating that takeovers of larger firms usually have a lower premium.

Walkling and Edmister (1985) also analyzed several variables and concluded that expected benefits for the merger have a positive impact on bid premium, higher bargaining power of the bidder would result in smaller bid premiums, companies with declining leverage and low valuation ratio usually bid higher premiums, the percentage of shares already controlled by the acquirer has a negative impact on premium (like previous mentioned studies referred), the bidding company seeking 50% of the target company's shares or if the takeover is a nonconglomerate type leads to, also, a higher premium. The authors also demonstrated that the existence of competition for the target company impacts the premium positively.

Bargeron et al. (2008) analyzed the impact of the bidder being a private or a public firm as they argued private equity firm managers could have higher incentives to close on a lower price or that public firms have greater costs related to withdrawing an offer so would commit more to complete the merge. The results showed premiums paid to public target companies is higher when the acquirer is a public firm and that a higher premium is paid by public bidders when target managerial and institutional ownership increases.

Target company corporate social responsibility was also studied by Gomes and Marsat, (2018) and they found that acquirers value it positively, as they consider it a way to reduce information asymmetry and targets' specific risk, which in turn leads to higher bid premiums.

The CEO being a women and their degree of representation on boards of bidding and target companies were also factors that had an impact on the bid premium as it was statistically and economically smaller if the CEO is a woman and it decreases with the increase on the proportion of women directors on the target company board (Levi et al., 2014).

Therefore, considering that bidding price is a significant variable for the success of a merger, managers should try to understand as much as possible about what can affect their decision regarding premium when considering how much to bid. In order to add to

this knowledge, this MFW proposes a different variable to have an impact on premium: the level of ownership of the acquiring company on their own company.

3. INSIDE OWNERSHIP

The impact of the board composition and managers holding shares of the company they manage is still inconclusive.

Some studies show a clear impact such is the case of the study of Oswald and J. S. J. Jahera (1991) who evidenced that firm's financial performance is significantly related with inside ownership[1], demonstrated by the higher excess returns when ownership increases and of the study of Howton, Howton and Olson (2001) that demonstrated that initial returns after an IPO also are directly related to share ownership by insiders[2] and the percentage of independent outsiders However, Krivogorsky (2006) study, despite finding that firms' profitability ratios (ROE, ROA, MTB) have a strong positive relation with the level of relational ownership and the portion of independent directors on the board, the author did not found any evidence of the level of inside ownership[3] having an effect in performance.

The opposite effect was also demonstrated by different studies that revealed that the level of inside ownership could have, instead, a negative impact on a company. Jensen and Meckling (1976) explained this negative impact using the agency theory. The agency theory states that managers, who should act as agents for owners or shareholders, may take actions that benefit themselves primarily instead of maximizing value for shareholders, such is the case of managers engaging on mergers that decrease shareholders' wealth in order to get an increase in their remuneration, as mergers usually cause. This way, a higher degree of ownership or financial attachment (value of shares owned) could increase managers' incentives to put their needs in first place.

[1]Inside ownership considering the amount of shares belonging to the officers and directors of the firm.
[2] Inside ownership considering the amount of shares belonging to the board of directors.
[3] Inside ownership considering the amount of shares belonging to the board of directors.

The negative effect on performance can be, instead, a result of the reduced control, as the higher the level of shares owned by managers the less shares would be controlled by outsider shareholders, who usually control the management and push for firm's efficiency (Grossman & Hart, 1986).

Trautwein (1990) also supported agency theory by showing that managers may also pay larger premium for a takeover that will provide them with personal gains, despite it being a good strategy or not for the firm, as acquisitions increase the size of a firm and that often has an impact in the manager's compensation and power.

However, other study states that managerial ownership can instead decrease the agency problems, leading to an increase in the value of the firm by aligning the interests of the managers with the outside shareholders and working has an incentive to chase after value-maximizing behaviors (Seifert et al., 2005).

Some studies report that given concerns about job security, a manager might tend to make less risky investment decisions, thus, adversely affecting the firm's overall performance (Oswald and J. S. J. Jahera, 1991), however, different studies found managerial ownership to be positively related with risk-taking decisions (Chen and Steiner 1999),

Agrawal and Mandelker (1990) study also revealed a statistically significant positive relation between outsider institutional ownership[4] and the stockholder's wealth and similarly that the existence of large shareholders would lead to better monitoring of managers and overall firm performance.

Morck, Shleifer and R. W. Vishny, (1988) analyzed the impact of managerial performance and achieved results of an increase in Tobin's Q as managerial ownership increases from 0% to 5%, then a fall as ownership increases to 25%, and then a final slower increase as ownership increases beyond 25%, reaching a conclusion of non-linearity. McConnell and Servaes (1990), Kole (1995) and Singh and Davidson (2003) also supported this conclusion and found non-linearity between inside ownership and company performance.

[4]Inside ownership considering the amount of shares belonging to the officers and directors of the firm.

Jahmani and Ansari, (2006) similarly found on their study no relationship between managerial ownership, firm performance and risk-taking, stating that managerial ownership is merely a reflection of the way in which managers receive their benefits and does not provide any incentive to work harder for improving the company's performance, while Seifert, Gonenc and Wright (2005) also not finding a consistent relationship between insider ownership and performance, state that there are some significant associations that may happen due to different local laws or local business environment.

Considering the existent literature, it is not certain the impact of the level of inside ownership of the bidding company on the company's performance and what impact, if any, there would be on bidding premium and that is what this study aims to explore.

Managers owning a higher share of the company can imply that they have more "skin in the game" and so are more exposed to the company's performance. Although, it is a possibility that a bigger ownership and exposure can act as incentives for managers to be more cautious with the premium they pay, as paying too much might be too risky considering their ownership position, as they would be putting the company in a bad state if they overpay too much. A high level of insider ownership could also mean less control over managers by outsiders and a weaker supervision can lead to a less efficient management that ends up paying more in a takeover. Also, an overconfident manager left unchecked from outsiders' control or with enough decision power might result in higher premiums and overpaying.

4. HYPOTHESIS

Analyzing the literature, it is not possible to conclude for certain if an increase in inside ownership will have a positive or negative impact on a company's performance. It could be argued that an increase in inside ownership would also increase how the interests of managers and shareholders are aligned or that managers would also be more exposed to how the company performs which would possibly lead to a decrease of the premium paid, however an increase in inside ownership could also mean less control for efficiency of managers by outside forces which in turn could lead to an increase in premium paid. This study aims to assess whether there is any association between the level of inside ownership with the premium paid.

***Hypothesis**: The level of inside ownership of the bidding company is associated with the bidding premium.*

5. DATA AND METHODOLOGY

The following analysis is based on data retrieved from Bloomberg. The data covers 870 friendly takeovers in Europe and America paid in cash from 2010 to 2019.

The sample contemplates mergers from 42 countries, being that around half of the mergers in the sample the acquiring company was based on the United States. The sectors with the largest representation were the Technology, Industrial and Consumer (non-cyclical) sectors (TABLE I). The yearly dispersion of the number of mergers is mostly equally divided between all years, however the years 2011 and 2012 show a higher occurrence of mergers than the average and during 2018 and 2019 there were less mergers in the sample than the average (TABLE II).

The main variables used for the study are the percentage of shares owned by insiders of the bidder company at the announcement date, being insiders, any holders representing 5% more of the total shares outstanding or any officers, members of the board of directors and the premium offered by the acquirer. Other variables were also collected at the merger announcement date for the study: the nature of the bid, the percentage of shares that the acquirer already had of the target company, bidder's market capitalization, cash and equivalents, total equity and total assets, debt to equity, return on equity and return on assets, acquirer country and acquirer industry sector.

Some companies on the sample were involved in more than one merger, however, given that the studied topic is the association between premium and level of inside ownership, there is no reason to exclude these observations as that would not put at risk the results and it can also be analyzed what happens to the premium given the inside ownership level at the time of each merger.

In this analysis were used Fixed Effects (FE) and Ordinary Least Squares (OLS) models, where resulted the following base regression:

$$\textbf{(1)}\ Premium_{it} = \alpha_0 + \beta_1 Insider\ Shares + \beta_2 Target\ Own. + \beta_3 Cash\_to\_Assets + \beta_4 Market\ Book + \beta_5 logAssets + \beta_6 Debt\ to\ Equity + \beta_7 ROE + \beta_8 US + \varepsilon_{it}$$

Dependent Variable

The acquisition premium percentage is the dependent variable and is calculated by applying the difference between the price paid per share and the company's share price and then dividing it by the company's share price. In order to account for any movement in the share price before the merger when calculating the premium it was used four alternative methods to compute the company's value: the share price of the target company at the announcement date, the average between the share price at announcement date and the share price on the previous day, the average between the shares price at announcement date and one week before and the average between the shares price at the announcement date and one month before.

These four methods were used to analyse if there would be any difference in the results and also because some literature states that by using more days to compute an average company value instead of just the value at the announcement date we can better pinpoint the company's real value more accurately (Barclay and Warner, 1993) and it would be possible that the company value would be increasing up to the announcement date (Brigida & Madura, 2012), which in fact is observed in the sample.

Analysing the premium (GRAPH I and TABLE III), it is possible to detect some differences between the different methods of calculating it. The mean changes with each method with 40.59% on announcement day, 36.88% on 1-day average premium, 38.14% on 1-week average and 41.59% on 1-month average. It can be observed that up until the announcement date, the target company value is decreasing and then picks up again. This increase may be caused by inside information regarding the merger being shared before its announcement that leads to an increase of the target company value share prices (Brigida & Madura, 2012; Haw et al., 1990; Jayaraman et al., 2001).

Considering that these four ways of computing the premium will be our dependent variable it is important to perform some tests to study the normality of the residuals of these variables in order to be able to use OLS estimators. First, it was drawn a histogram

of the four variables and was possible to notice that they follow a normal distribution (GRAPH II TO V), then it was also performed a Kernel Density estimation (GRAPH VI TO IX) and a standardized normal probability plot (GRAPH X TO XIII) to check the variables density and finally was done a Shapiro-Wilk test (TABLE IX) to test for normality for each variable, the results obtained were also optimist regarding the normality of premium paid, with a high enough test value to not reject the null-hypothesis of normality.

Independent Variable

The independent variable in this study is the level of inside ownership of the acquiring company, being hypothesized an association between it and premium paid. This association is not clear if it is positive or negative as some of the previously mentioned literature states that a high level of inside ownership may mean an increased performance of the company and more aligned interests of managers and shareholders which in turn would lead to smaller premium paid but other literature finds no relationship between performance and level of inside ownership and other literature even states that a high level of inside ownership would mean less control of outside forces which would result in a less efficiently managed company and lead to higher premium.

For the level of inside ownership in this study was considered the percentage at the day of the merger announcement as other moments were also analysed up to 1 month prior the announcement date and no considerable changes were found. The percentage of inside ownership (Table IV) ranges between 0% to 90.22%, however most observations are low, resulting in a mean of 3.78%.

Control Variables

For control variables (Table V) this study considered several variables that previous literature has studied previously and with results that show a relationship with premium:

Target Ownership - ownership that the bidder already had of the target company to control for the robustness of the model (Dionne et al., 2015);

Return on Equity – the ratio of return on equity was used to control for profitability (Haunschild, 1994);

Debt to equity – debt to equity ratio was used to account for leverage (Dionne et al., 2015);

Market to Book – the market to book ratio to control for the market perspective of the company compared to the available business's net assets (Walkling & Edmister, 1985);

Cash to Assets - ratio for bidder company to control for liquidity (Walkling & Edmister, 1985);

Total Assets (log) - variable to control for the size of the company (Dionne et al., 2015);

US based acquirers - dummy variable to assess for U.S. based acquirers.

Diagnostic tests

This study considered four different ways of computing the premium, so the base regression was repeated 4 times for each of these different methods.

After regressing the model, the independent variables tests were performed to check for heteroskedasticity and multicollinearity.

The fact that there are no correlation levels below -0.6 or above 0.6 on the correlation matrix (TABLE VI) shows there is no multicollinearity presence and, thus, the value of the coefficients and the interpretation of the independent variables are not at risk which increases the confidence in the model results. The variance inflation factor was also computed and it showed no signs of multicollinearity (TABLE VIII).

Then it was tested the presence of heteroskedasticity, which exists when the standard errors of a variable, over a specific amount of time, are non-constant. Its presence can mean a less precise estimation and a lower precision increases chances that the coefficient estimates are far from the correct value. To check for heteroskedasticity presence, two tests were performed: a residual-versus-fitted plot (GRAPH XV to XVII) and a Cameron-Trivedi decomposition test (TABLE X to XIII).

As the residual-versus-fitted plot showed no signs of a pattern and the Cameron-Trivedi decomposition test showed a small chi-square and a high p-value it is to conclude there is no relevant heteroskedasticity and there is homoscedasticity in the regressions.

After regressing the base model, it was regressed a modified version to control for year (fixed effects) and then for year and industry. Using the base model, it was also used two modified version to study what would happen to premium if return on equity or cash to assets increase in a scenario where there is inside ownership.

5. Results and Analysis

The results of the tests when considering the four ways of calculating the premium displayed relevant differences (Table VII).

When the premium at announcement date is considered for the base regression, only the variable percentage of the target already owned showed a significant negative relationship with premium. This implies that the more control the bidder has of the target company before the merger the less premium he would pay. This result is consistent with previous literature.

When the premium of 1-week average price and the 1-month average price are considered on the base regression, the outputs are similar, but in addition to the variable concerning the percentage of the target already owned by the acquirer, the cash to assets ratio was also showed to be relevant with a positive relationship with premium. Meaning that the higher the liquidity of the acquirer, the higher the premium they pay, which is also consistent with previous literature.

When the Premium of 1 Day average price is considered on the base regression, the results vary from the previous three and, besides the variable corresponding to the percentage of the target already owned and the cash to assets ratio, also the dummy relative to the acquirer being based in the United States becomes relevant with a positive impact on premium and the variable in study corresponding to the percentage of inside ownership also becomes significant with a negative impact on premium. This means that if the acquirer is based on the United States the premium will be higher and that if the

level of inside ownership of the acquiring company increases then the premium will decrease.

Tests were performed also where industry and year controls were added to the base regression, both individually and at simultaneous and the results remained the same for each of the four methods of calculating premium.

It was also analyzed what would happen to premium if return on equity increased when there is inside ownership, and the results were not significant, however when there is inside ownership if cash to assets ratio increases the premium is positively impacted which is consistent with the previous results.

6. CONCLUSIONS

The results of the empirical study regarding the impact of the level of inside ownership on the premium paid for a takeover to assess the hypothesis that there is an association between them are inconclusive. When the method of calculating the premium changes, the results also change. The difference between the methods is how the value of the target company is calculated in each one. When the premium is calculated considering the average price of the announcement date and the day before, the level of inside ownership shows a significant negative relationship with premium, meaning the higher the level of inside ownership, the lower the premium. When we consider the value at announcement date, the average value using the company values up to 1 week and to 1 month the negative impact of the level of inside ownership is not relevant. The main justification for these differences is that the premium calculated considering the average price of 1 day before the announcement and the announcement date is considerably lower than the other three methods, as the target company value is considerably higher on the day before the announcement (Brigida & Madura, 2012).

Given that the impact of inside ownership on premium has not been deeply explored by literature, this study would be a step in that direction. This study allows the perception that the inside ownership might have a role on how much premium is paid, with the increase of the level of inside ownership decreasing how much premium is paid. This would probably be caused by an increase of the align of interests of shareholders and managers which would lead to managers opting for less costly premiums. With the results

of this study in mind, it is possible to understand better premium values with a new possible influencer like inside ownership. Shareholders and other exterior forces to the management, in the cases where inside ownership is low, as price paid would tend be higher, should overview and be more involved in the premium decision process to ensure that the premium is not too high.

Considering that the relationship between level of inside ownership and premium was not studied deeply before, and given the mixed results of this study that change according to the method of calculating premium, perhaps as a future study this same hypothesis could be analyzed using a wider sample of mergers to determine if the results are the same. Also, another definition of inside ownership could be used, using a stricter concept such as considering only board members.

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Appendices

TABLE I

Table 1 presents the sectors distribution of the mergers in the sample studied.

Acquirer Industry Sector	Frequency	Percentage
Basic Materials	64	7.36
Communications	84	9.66
Consumer, Cyclical	90	10.34
Consumer, Non-cyclical	242	27.82
Diversified	6	0.69
Energy	37	4.25
Industrial	183	21.03
Technology	140	16.09
Utilities	24	2.76
Total	870	100.00

TABLE II

Table II presents the dispersion of mergers in the sample per year.

Year	Frequency	Percent
2010	87	10.00
2011	118	13.56
2012	128	14.71
2013	74	8.51
2014	86	9.89
2015	77	8.85
2016	84	9.66
2017	98	11.26
2018	60	6.90
2019	58	6.67
Total	870	100

GRAPH I

The Graph I presents the mean of the four different methods of calculating premium per year.

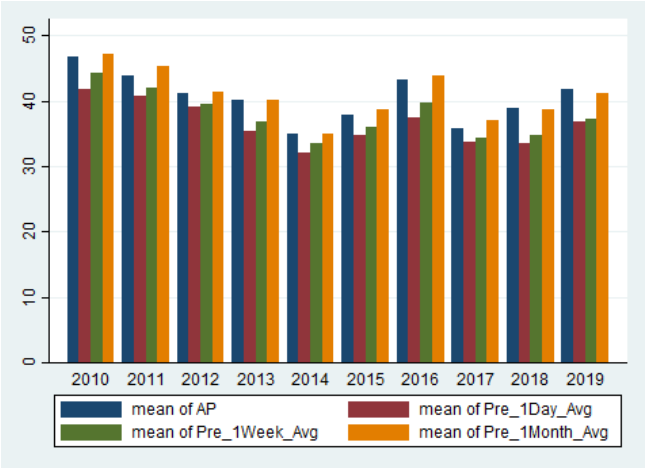


TABLE III

Table III depicts the basic descriptive statistics of the dependent variables to test in the regression analysis.

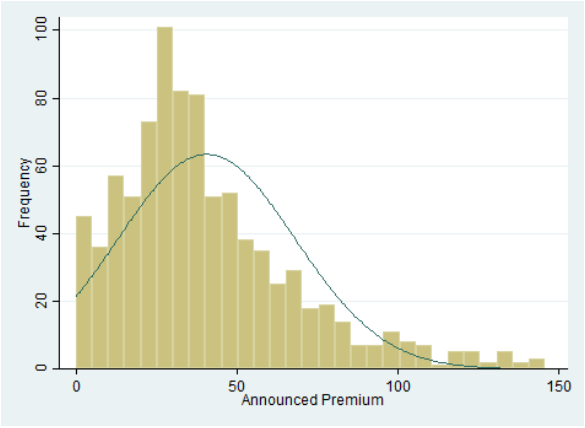
Observations = 870

Variable	Mean	Std. Dev.	Min	Max	1st Quartile	Median	3rd Quartile
Announcement	40.59	27.50	0.12	145.74	22.45	34.39	52.94
1 Day Avg	36.88	27.11	0.08	148.45	17.3984	31.28	51.13
1 Week Avg	38.14	26.98	0.16	142.42	19.08	32.78	51.34
1 Month Avg	41.06	27.53	0	145.74	22.90	34.64	53.58

ANNOUNCEMENT – PREMIUM ON ANNOUNCEMENT DATE; 1 DAY AVG – PREMIUM USING AVERAGE OF COMPANY VALUE ON ANNOUNCEMENT DATE AND 1 DAY BEFORE; 1 WEEK AVG - PREMIUM USING AVERAGE OF ALL COMPANY VALUES SINCE ANNOUNCEMENT DATE TO 1 WEEK BEFORE; 1 MONTH AVG - PREMIUM USING AVERAGE OF ALL COMPANY VALUES SINCE ANNOUNCEMENT DATE TO 1 MONTH BEFORE.

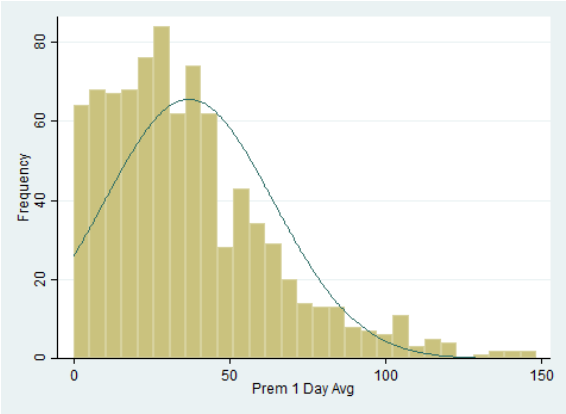
GRAPH II

Graph II depicts the histogram of the dependent variable Prem. at Announced Premium.



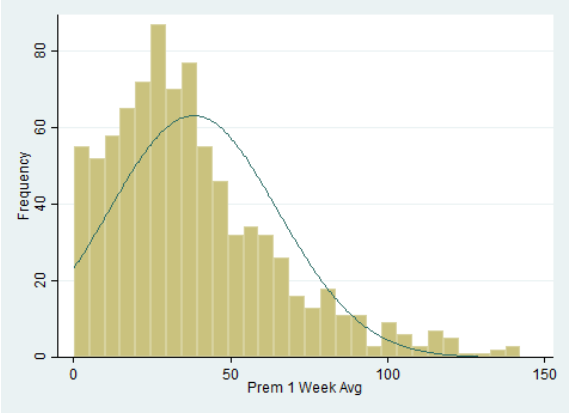
GRAPH III

Graph III depicts the histogram of the dependent variable Prem. 1 day avg



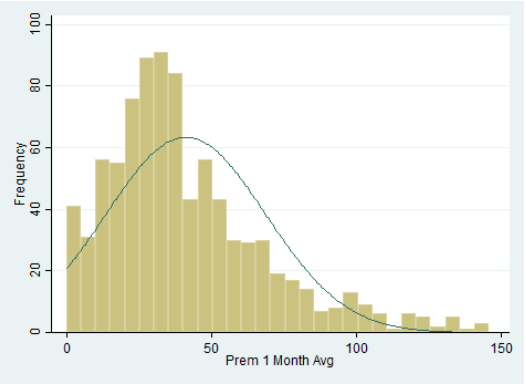
GRAPH IV

Graph IV depicts the histogram of the dependent variable Prem. 1 week avg



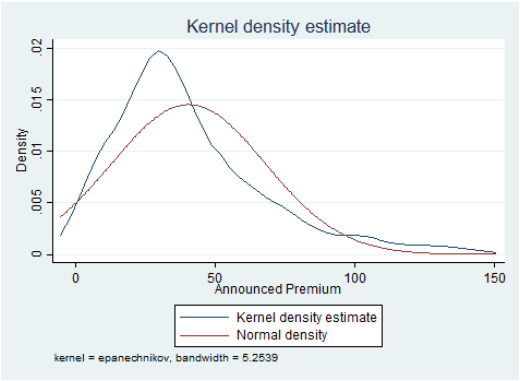
GRAPH V

Graph V depicts the histogram of the dependent variable Prem. 1 month avg



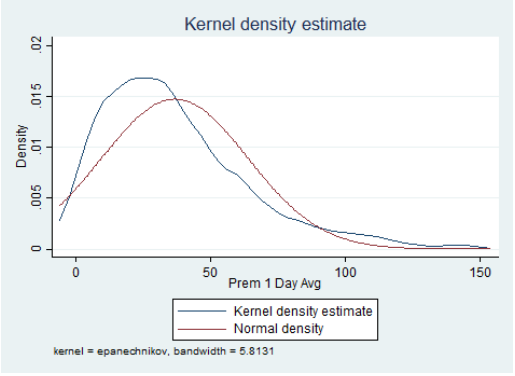
GRAPH VI

Graph VI presents the Kernel density estimation for Prem. At announcement date against the normal density.



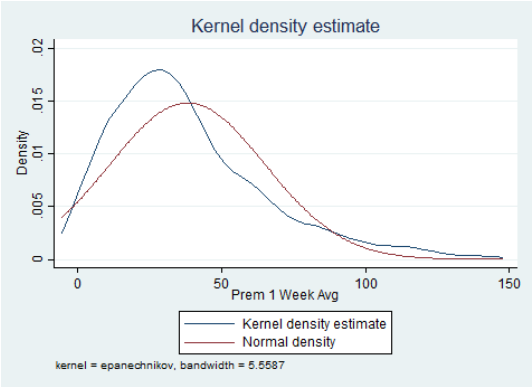
GRAPH VII

Graph VII presents the Kernel density estimation for Prem. 1 day avg. against the normal density.



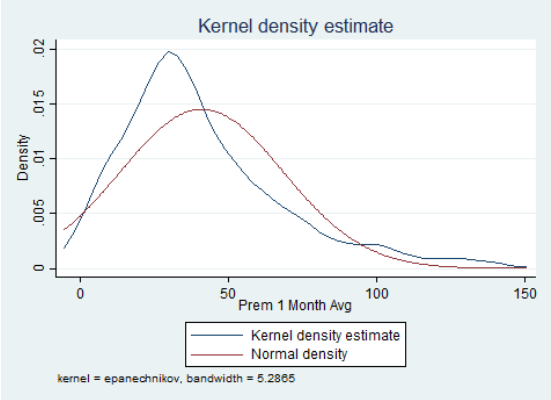
GRAPH VIII

Graph VIII presents the Kernel density estimation for Prem. 1 week avg. against the normal density.



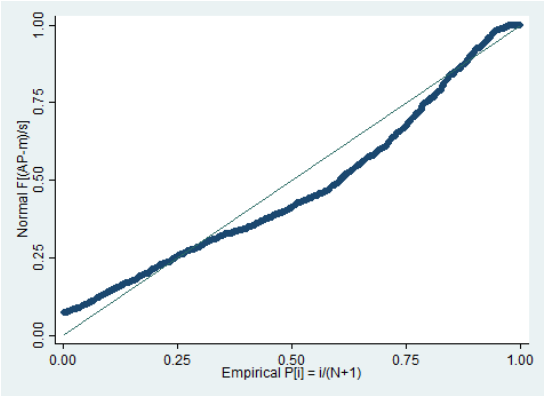
GRAPH IX

Graph IX presents the Kernel density estimation for Prem. 1 month avg. against the normal density.



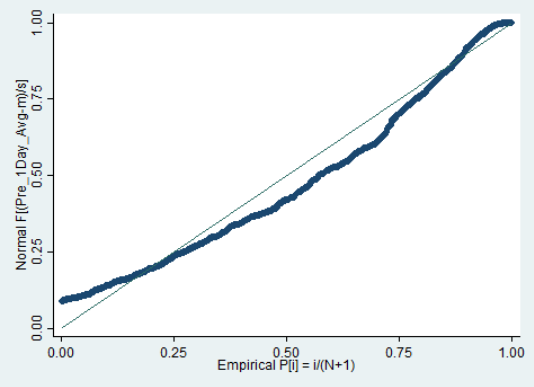
GRAPH X

Graph X presents a probability plot of the squared residuals for Prem. at announcement date



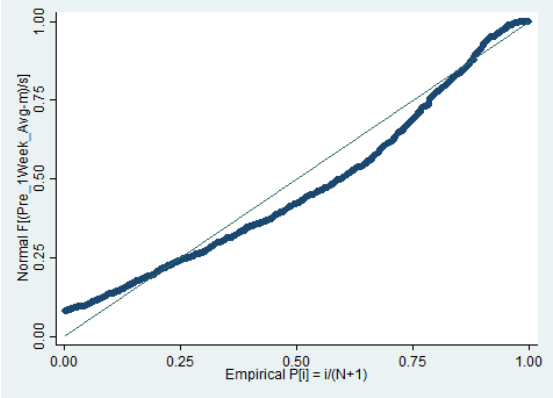
GRAPH XI

Graph XI presents a probability plot of the squared residuals for Prem. 1 day avg.



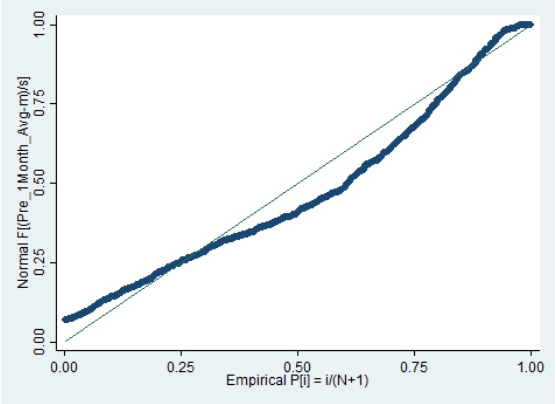
GRAPH XII

Graph XII presents a probability plot of the squared residuals for Prem. 1 week avg.



GRAPH XIII

Graph XIII presents a probability plot of the squared residuals for Prem. 1 month avg.



GRAPH XIV

Graph XIV presents the mean of Insider shares at announcement date (Ins_Shares_Out0), at one day before the announcement date (Ins_Shares_Out1), 1 week before the announcement date (Ins_Shares_Out7) and one month before the announcement date (Ins_Shares_Out30) per year.

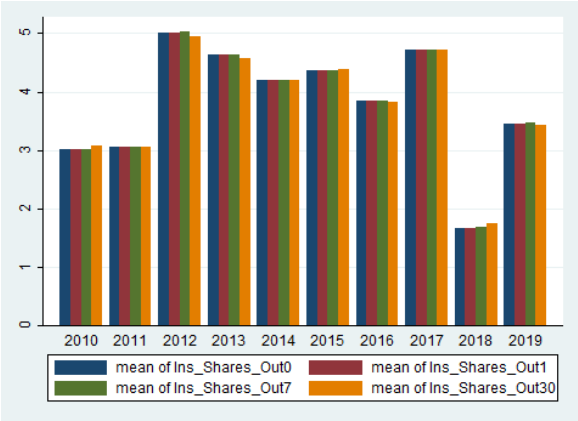


TABLE IV

Table IV depicts the basic descriptive statistics of the dependent variable to test in the regression analysis.

Observations = 870

Variable	Mean	Std. Dev.	Min	Max	1st Quartile	Median	3rd Quartile
Ins_Shares_Out0	3.78	8.99	0	90.22	0.08	0.58	2.54
Ins_Shares_Out1	3.78	8.99	0	90.22	0.08	0.58	2.54
Ins_Shares_Out7	3.79	9.01	0	90.22	0.08	0.58	2.54
Ins_Shares_Out30	3.78	8.97	0	90.08	0.08	0.57	2.54

Ins_Shares_Out0 – Inside ownership of the acquirer at announcement date; Ins_Shares_Out1 - Inside ownership of the acquirer 1 day before announcement date; Ins_Shares_Out7 - Inside ownership of the acquirer 7 days before announcement date; Ins_Shares_Out30 - Inside ownership of the acquirer 30 day before announcement date;

TABLE V

Table V depicts the basic descriptive statistics of independent variables to test in the regression analysis.

Observations = 870

Variable	Mean	Std. Dev.	Min	Max	1st Quartile	Median	3rd Quartile
Target Own (%)	10.94	24.10	0	99.78	0	0	0
ROE (%)	16.83	23.28	-120.59	303.48	8.0351	14.31	21.37
Debt to Eq (%)	79.15	129.98	0	1904.85	21.28	50.12	88.53
Market to Book (%)	3.43	3.44	0.21	39.56	1.57	2.50	3.99
Cash to Assets (%)	11.21	10.10	0.01	77.60	4.17	8.63	14.88
LogAssets	8.71	1.87	2.68	13.23	7.45	8.83	10.11

TARGET OWN – LEVEL OF OWNERSHIP OF TARGET COMPANY BY ACQUIRER; TOTEQ – TOTAL EQUITY; ROE – RETURN ON EQUITY; ROA – RETURN ON ASSETS; DEBT TO EQ – DEBT TO EQUITY;

TABLE VI

Table VI presents the correlation matrix of the independent variables. The correlation coefficients are shown and represent the strength and direction (positive or negative) of the linear relationship between each of the independent variables.

	AP	Ins. Shares Out	Target Owned	Cash to Assets	MB	Log Assets	Debt to Eq	ROE
AP	1.0000							
Ins Shares Out	-0.0482*	1.0000						
Target Owned	-0.1904*	0.0418*	1.0000					
Cash to Assets	0.0680*	0.1180*	-0.0365*	1.0000				
MB	0.0493*	0.0010	-0.0913*	0.0916*	1.0000			
logAssets	0.0199*	-0.2930*	-0.0260*	-0.3633*	0.0596*	1.0000		
Debt to Eq	-0.0235*	0.0498*	-0.0183*	-0.1703*	0.4686*	0.1591*	1.0000	
ROE	0.0558*	-0.0419*	-0.0904*	0.0536*	0.5886*	0.1398*	0.3806*	1.0000

* represents statistically significant at 10%

TABLE VII

Table VII presents the results for the regression model considering the four methods of calculating premium as dependent variable.

	AP	Pre 1Day Avg	Pre 1 Week Avg	Pre 1 Month Avg
Ins Shares	-0.110 (0.254)	-0.200* (0.012)	-0.166 (0.057)	-0.128 (0.191)
Target Owned	-19.46*** (0.000)	-16.87*** (0.000)	-17.89*** (0.000)	-19.72*** (0.000)
Cash to Assets	16.58 (0.084)	21.60* (0.039)	20.92* (0.041)	21.26* (0.033)
MB	0.141 (0.736)	-0.399 (0.237)	-0.308 (0.392)	0.116 (0.779)
logAssets	0.364 (0.528)	-0.237 (0.672)	-0.0620 (0.912)	0.340 (0.551)
Debt to Eq	-0.906 (0.217)	-0.706 (0.299)	-0.826 (0.218)	-0.897 (0.221)
ROE	4.173 (0.505)	10.45 (0.072)	9.491 (0.118)	4.833 (0.432)
US	2.434 (0.215)	4.034* (0.035)	3.729 (0.051)	1.888 (0.335)
Constant	36.20*** (0.000)	37.04*** (0.000)	36.92*** (0.000)	36.70*** (0.000)
Observations	870	870	870	870
Adjusted R^2	0.047	0.054	0.054	0.049

p-values in parentheses

* p<0.05, ** p<0.01, *** p<0.001

TABLE VIII

Table VIII presents the Variance Inflation Factor, which low value allows the conclusion of no multicollinearity.

Variable	VIF	1/VIF
MB	1,81	0,5511
ROE	1,61	0,6210
Debt to Eq	1,42	0,7066
logAssets	1,3	0,7721
Cash to Assets	1,24	0,8070
US	1,13	0,8885
Ins. Shares Out	1,11	0,9006
Target Owned	1,08	0,9250
Mean VIF	1,34	

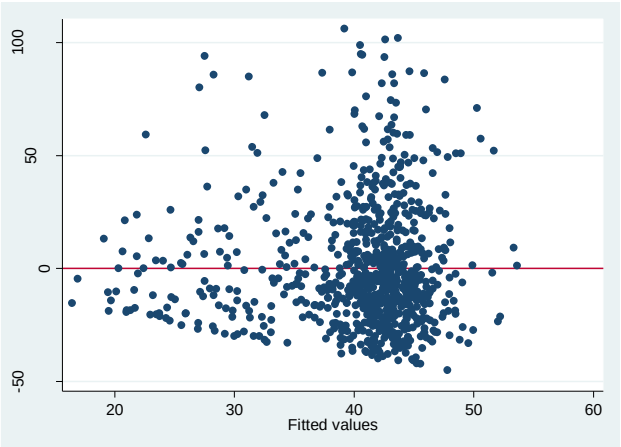
TABLE IX

Table IX presents the Shapiro-Wilk W test results for each method of calculating the premium. The high test value is enough to reject the null-hypothesis of normality.

Variable	Obs	W	V	z	Prob>z
AP	870	0.90583	52.319	9.744	0.00000
Pre_1Day_Avg	870	0.91645	46.421	9.449	0.00000
Pre_1Week_Avg	870	0.91651	46.389	9.448	0.00000
Pre_1Month_Avg	870	0.90694	51.702	9.715	0.00000

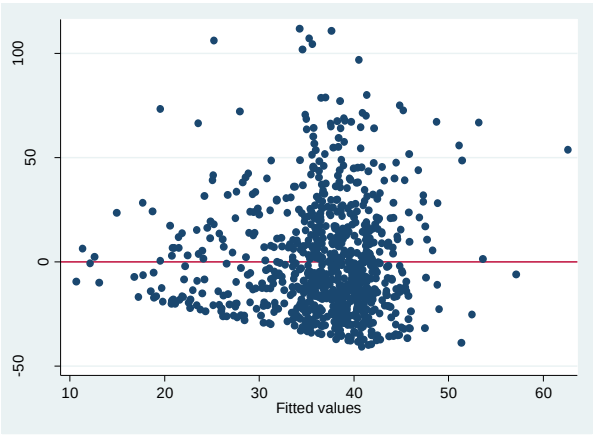
GRAPH XV

The Graph XV presents the residual-Versus-Fitted plot of Prem. at announcement date.



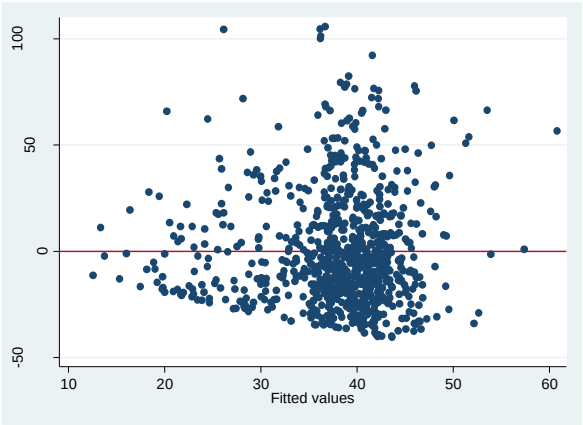
GRAPH XVI

The Graph XVI presents the residual-Versus-Fitted plot of Prem. 1 day avg.



GRAPH XVII

The Graph XVII presents the residual-Versus-Fitted plot of Prem. 1 week avg.



GRAPH XVII

The Graph XVII presents the residual-Versus-Fitted plot of Prem. 1 month avg.

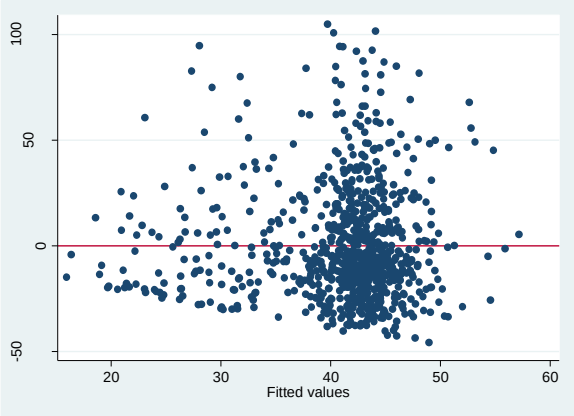


TABLE X

CAMERON-TRIVEDI DECOMPOSITION - PREM. AT ANNOUNCEMENT DATE

This test was performed to check for the presence of heteroskedasticity as it may lead to less precise estimations. The small chi-square obtained and high p-value allows the conclusion that there is no relevant heteroskedasticity

Source	chi2	df	P
Heteroskedasticity	22.11	43	0.9966
Skewness	63.30	8	0.0000
Kurtosis	20.09	1	0.0000
Total	105.49	52	0.0000

TABLE XI

CAMERON-TRIVEDI DECOMPOSITION - PREM. 1 DAY PRICE AVERAGE

This test was performed to check for the presence of heteroskedasticity as it may lead to less precise estimations. The small chi-square obtained and high p-value allows the conclusion that there is no relevant heteroskedasticity

Source	chi2	df	P
Heteroskedasticity	26.51	43	0.9773
Skewness	51.38	8	0.0000
Kurtosis	10.48	1	0.0012
Total	88.37	52	0.0012

TABLE XII

CAMERON-TRIVEDI DECOMPOSITION - PREM. 1 WEEK PRICE AVERAGE

This test was performed to check for the presence of heteroskedasticity as it may lead to less precise estimations. The small chi-square obtained and high p-value allows the conclusion that there is no relevant heteroskedasticity

Source	chi2	df	P
Heteroskedasticity	28.02	43	0.9624
Skewness	61.09	8	0.0000
Kurtosis	11.31	1	0.0008
Total	100.42	52	0.0001

TABLE XIII

CAMERON-TRIVEDI DECOMPOSITION - PREM. 1 MONTH PRICE AVERAGE

This test was performed to check for the presence of heteroskedasticity as it may lead to less precise estimations. The small chi-square obtained and high p-value allows the conclusion that there is no relevant heteroskedasticity

Source	chi2	df	P
Heteroskedasticity	22.27	43	0.9963
Skewness	65.98	8	0.0000
Kurtosis	19.48	1	0.0000
Total	107.73	52	0.0000